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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,164	03/27/2001	Brian R. Stoner	032566-010	8176

7590 12/29/2004  
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EXAMINER
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GUHARAY, KARABI

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/817,164

Applicant(s)

STONER ET AL.

Examiner

Karabi Guharay

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 60-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 60-71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>03/05/04</u> . | 6) <input type="checkbox"/> Other: _____  |

Amendment filed on 10/14/2004 has been considered and entered.

Claims 72-80 have been cancelled.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 60, 66 are rejected under 35 U.S.C. 102(b) as being anticipated by Lengyel et al. (US 5495143, hereinafter "Lengyel").

Regarding claims 60 & 66, Lengyel discloses a gas discharge device or lighting device (Fig 2) comprising a sealed chamber (envelope 210) containing at least one noble gas (in this case, argon or krypton) and at least one electrode (cathode and anode, 230 & 250, lines 14-19 of column 3 & lines 44-55 of column 4) and electrode(250) comprising field emitter with microscopic elements (Fig 3 and Fig 4, lines 26-28 of column 5), in the shape of nanorods (lines 47-49 of column 5, and lines 1-26 of column 6).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 61-65 and 67-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lengyel et al. as applied to claims 60 & 66 above, and further in view of Uemura et al. (US 6239547).

Regarding claims 61 & 67, Lengyel discloses all the limitations of claims 61 & 67 except for electrode comprising carbon nanotubes.

However, Umera et al. discloses a fluorescent device having an electrode comprising carbon nanotube and further teaches that carbon nanotube used as field emitter has further advantage of high resistant to gas in the device (lines 35-39 of column 17) and can emit a large number of electrons and use of carbon nanotube facilitates the manufacturing process (see lines 34-47 of column 2).

Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to use carbon nanotube, as taught by Umera et al. in the device of Lengyel, since this will provide a resistant electron emitting cathode which can emit large number of electrons and can be manufactured easily.

Regarding claims 62 & 68, Umera discloses that the electrode comprises pre-formed carbon nanotubes (see Fig 9A) deposited after formation on at least a portion of a surface (904 of Fig 9B) of the electrode (lines 10-12 of column 17). The same reason for combining art as in claim 61 & 67 applies.

Regarding claims 63 & 69, Umera discloses that the carbon nanotubes are deposited after formation on a surface of the electrode by printing (lines 1-5 of column 19). The same reason for combining art as in claim 61 & 67 applies.

Regarding claims 64 & 70, Umera discloses that the electrode (see Fig 9B) comprises a substrate (904), carbon nanotube (902) and an adhesion promotion material (905) to promote adhesion of the carbon nanotubes to the substrate (lines 10-14 of column 17). The same reason for combining art as in claim 61 & 67 applies.

Regarding claims 65 & 71, Umera discloses that the adhesion promoting material (905) comprises silver particles and low softening frit glass (lines 41-45 of column 5) which is a material having low melting point relative to the substrate and the carbon nanotube. The same reason for combining art as in claim 61 & 67 applies.

#### ***Other Prior Art Cited***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure : Sugiyama (JP 57-96453); Tsai (US 2002/0121856).

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (571) 272-2452. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Karabi Guharay*  
Karabi Guharay  
Patent Examiner  
Art Unit 2879